

COMPUTER SCIENCE (PH.D.)

Requirements

Course	Title	Credits
Research Courses		
CISC 7070	Research Methods	3
CISC 7075	Research Project	3
Breadth Requirements		
One qualifying course from each of Groups I, II, and III		9
Two qualifying or non-qualifying courses drawn from Groups I-III ¹		6
Depth Requirements		
Two electives from Group IV		6
Pedagogy Requirement		
CISC 7090	Doctoral Pedagogy Seminar	3
CISC 7580	Computer Science Teaching Experience (taken four times, for two credits)	8
Qualifying Exams		0
Students must complete three qualifying exams (see details below).		
CISC 0931	Ph.D. Qualifying Exam: Computer Science	0
Dissertation		
CISC 0950	Dissertation Proposal Preparation (taken at least two times, for four credits)	8
CISC 0960	Proposal Defense Computer Science	0
CISC 7999	Dissertation Research in Computer Science	24
Total Credits		70

¹ Any course with the attribute CSFT (Group I), CSSS (Group II), or CSID (Group III) may fulfill this requirement.

Dissertation Progress Policies

A student may be placed on academic probation if they do not have an accepted dissertation proposal in at most 5 semesters after passing their qualifying exams, or if they have not completed their dissertation in at least 5 semesters after proposal approval.

Qualifying Exam Requirement

Each student must complete a qualifying exam before they are permitted to proceed to develop a dissertation proposal. The exam is satisfied by the student obtaining a grade of A or A- in at least one course from specific courses drawn from each of the three groups (I-III), noted below. These courses each include some coursework which focuses on ethically-informed computer science training in the subject area of the course.

Group I: Foundations & Theory

Courses in this group have the CSFT attribute.

Course	Title	Credits
CISC 5200	Computer Language Theory	3
CISC 5825	Computer Algorithms	3

CISC 6150	Programming Languages	3
CISC 6660	Applied Cryptography	3
CISC 6890	Advanced Computer Algorithms	3
CISC 7010	Formal Methods	3

Qualifying Courses

The following courses in this list are qualifying exam courses and, additionally, have the CSFQ attribute:

Course	Title	Credits
CISC 5200	Computer Language Theory	3
CISC 6890	Advanced Computer Algorithms	3
CISC 7010	Formal Methods	3

Group II: Systems & Software

Courses in this group have the CSSS attribute.

Course	Title	Credits
CISC 5550	Cloud Computing	3
CISC 5640	Nosql Database Systems	3
CISC 6100	Software Engineering	3
CISC 6345	Advanced Database Systems	3
CISC 6630	Wireless Security	3
CISC 6750	IOT Forensics and Security	3
CISC 6935	Advanced Distributed Systems	3
CISC 7110	Advanced Computer Networks	3

Qualifying Courses

The following courses in this list are qualifying exam courses and, additionally, have the CSSQ attribute:

Course	Title	Credits
CISC 6345	Advanced Database Systems	3
CISC 6935	Advanced Distributed Systems	3
CISC 7110	Advanced Computer Networks	3

Group III: Informatics & Data Analysis

Courses in this group have the CSID attribute.

Course	Title	Credits
CISC 5352	Machine Learning in Finance	3
CISC 5700	Cognitive Computing	3
CISC 5790	Data Mining	3
CISC 5800	Machine Learning	3
CISC 5950	Big Data Computing	3
CISC 6000	Deep Learning	3
CISC 6525	Artificial Intelligence	3
CISC 6910	Data and Information Fusion	3

Qualifying Courses

The following courses in this list are qualifying exam courses and, additionally, have the CSIQ attribute:

Course	Title	Credits
CISC 5800	Machine Learning	3
CISC 6525	Artificial Intelligence	3
CISC 6910	Data and Information Fusion	3

Group IV: Advanced Topics

Courses in this group have the CSAT attribute.

Course	Title	Credits
CISC 6210	Natural Language Processing	3
CISC 6352	Advanced Computational Finance	3
CISC 6376	Software Design Patterns	3
CISC 6500	Bioinformatics	3
CISC 6550	Systems Neuroscience	3
CISC 6640	Privacy and Security in Big Data	3
CISC 6700	Medical Informatics	3
CISC 6880	Blockchain Technology	3
CISC 7120	Robotics	3
CISC 7510	Computer Vision/Image Recognition	3
CISC 7650	Cybersecurity Operations	3